

Amendments to the Specification

Please insert the following heading and paragraph as the Abstract for the present application. A copy of the Abstract is attached to the response as a separate page:

ABSTRACT

In various aspects, the present invention provides nucleic acid sequence encoding all or part of a new plant long chain fatty acid condensing enzyme (a fatty acid elongase), designated herein as KCS2 (for beta-ketoacyl-coenzyme A synthase 2). In some embodiments, KCS2 may mediate the biosynthesis of C18, C20, C22 and C24 fatty acids. The activity of the enzyme is typically characterized by two carbon (malonyl-CoA) additions to C16, C18, C20 and C22 moieties (C16-C22 acyl CoA molecules), i.e. condensation of malonyl-CoA with a C16, C18, C20 or C22 acyl-CoA. The fatty acids produced by the enzyme may for example be saturated 18:0, 20:0, 22:0 and 24:0 fatty acids. The invention includes recombinant nucleic acid molecules comprising a heterologous nucleic acid coding sequence encoding the plant long chain fatty acid condensing enzyme.